

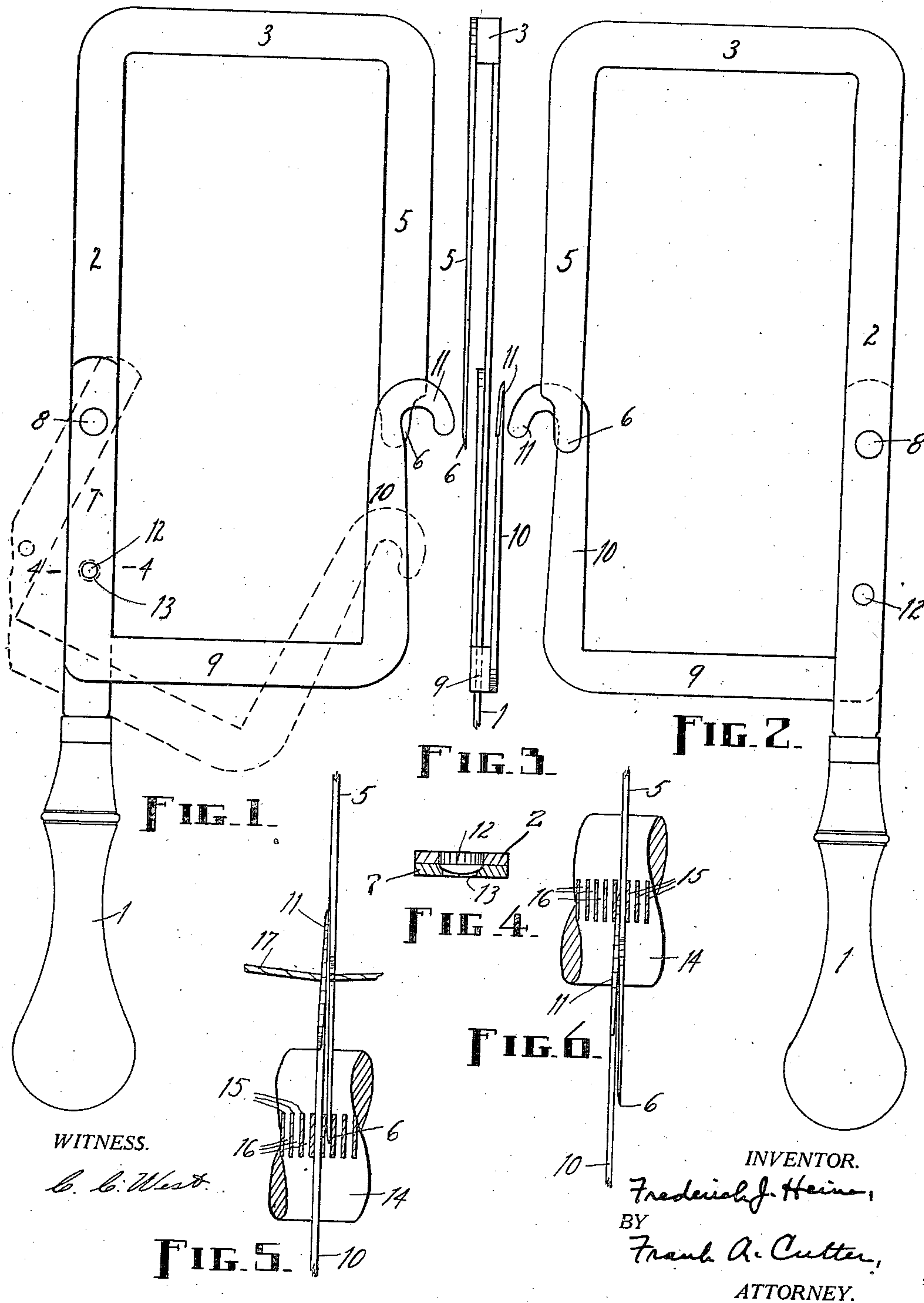
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REED HOOK

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UNITED STATES PATENT OFFICE.

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REED HOOK.

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To all whom it may concern:

Be it known that I, FREDERICK J. HEINE, a citizen of the United States of America, and a resident of Huntington, in the county of Hampshire and State of Massachusetts, have invented a new and useful Reed Hook, of which the following is a specification.

My invention relates to improvements in implements commonly known as "reed hooks" and which are employed in inserting warp-threads in the reeds of looms by hand, and consists essentially and generally of a certain peculiar frame having separable, resilient, leading and hook terminals, such frame being preferably provided with a handle, all as hereinafter set forth.

It is a slow and tedious operation to insert by hand the warp-threads in the dents of the reed of a loom with the ordinary hook, and frequently a dent is skipped, in consequence of which much time, labor, and expense is involved, inasmuch as it is then necessary to remove all of the warp-threads back to the place where the skip was made, and from such place do the work over again. The primary object of my invention is, therefore, to provide a simple and convenient drawing-in implement with which the warp-threads can be introduced into the dents expeditiously, and all danger is avoided of passing by any dent without first passing the warp-thread through the same.

Another object is to provide an implement of this character which is constructed to travel, when reciprocated, from one end of a reed to the other, and during this lateral course to engage each successive reed wire, and by reason of such engagement pass through each and every dent of said reed.

Other objects and advantages will appear in the course of the following description. I attain the objects and secure the advantages of my invention by the means illustrated in the following drawings, in which—

Figure 1 is a side elevation of a reed hook which embodies a practical form of my invention; Fig. 2, an elevation of the opposite side of said hook; Fig. 3, a rear edge elevation of the implement illustrative of the resiliency of the separable terminals, whereby such terminals when in proper relationship for actual use are normally maintained in close yet yielding contact with each

other, the handle being omitted; Fig. 4, an enlarged cross section through a portion of said implement, taken on lines 4—4, in Fig. 1; Fig. 5, a fragmentary, sectional view, on an enlarged scale, of a reed and a rear edge elevation of the leading and hook terminals of the implement, showing the manner in which a warp-thread is drawn by the same through a dent in said reed, and, Fig. 6, a similar view illustrative of the further operation of the implement.

Similar reference characters designate similar parts throughout the several views.

My drawing-in implement comprises a two-part or double-section frame mounted on or provided with a handle 1. One part or section of this frame consists of a shank 2, to the lower terminal of which the handle 1 is attached, a rearwardly-extending arm 3 at the upper terminal of said shank, and a downwardly-extending arm 5 at the rear end of said first-named arm, which last-named arm terminates in a laterally tapered finger 6, a little below the horizontal plane of the transverse center of said shank. The finger 6 is comparatively thin at its lower edge, and said finger constitutes what has hereinbefore been termed the "leading terminal" of the implement. The other part or section of the frame consists of an arm 7, which is pivotally connected at 8 with the shank 2 and adapted to be positioned alongside of said shank, a rearwardly-extending arm 9 at the bottom of said first-named arm, and an upwardly-extending arm 10 at the rear end of said arm 9, said arm 10 terminating at the top in a rearwardly-extending, laterally-tapered hook 11. The upper-edge portion of the hook 11, like the lower-terminal portion of the finger 6, is comparatively thin. This hook constitutes what has hereinbefore been termed the "hook terminal" of the implement.

The pivot 8 is located a little below the transverse center of the shank 2 and near the upper end of the arm 7. A stud 12 is set in the shank 2 some distance below the pivot 8, and the arm 7 has a hole 13 therein to receive the projecting portion of said stud, which portion is convex, when said arm is in alignment with said shank. Thus the stud 12 affords a lock for the movable or pivotally-connected member of the implement, and permits such member to be

moved on the pivot 8 when sufficient force is applied to cause the arm 7 to snap out of and into engagement with said stud. The arm 7 is on the right-hand side of the shank 2.

The frame members described above are resilient and so constructed and their parts so relatively arranged that the finger 6 and the hook 11, when disengaged, spring outwardly into separate vertical planes, so that normally said finger and hook would be widely separated, were the arm 7 to be moved into locking engagement with the stud 12 without forcing the finger and hook inwardly to dispose them on opposite sides of each other before they are in lateral juxtaposition, that is, opposite sides to their relative positions, as shown in Fig. 3. As arranged in this view the finger 6 and the hook 11 are inoperative. In order to be operative it is necessary that these parts be retained in close contact by their inherent resiliency, consequently, when the movable frame member is swung upwardly into position, the finger and the hook are forced past each other so that the former is at the left and the latter at the right, assuming that the implement be viewed edgewise from the front. The open position of the movable frame member is shown by dotted lines in Fig. 1. In this manner the finger 6 and the hook 11 are normally retained in contact and disposed in operative position, but they can nevertheless be forcibly separated laterally, the arms 5 and 10 then yielding to the extent required, in the manner and for the purpose hereinafter explained.

If it were never necessary or desirable to remove the implement from the reed, after the former has been started through the latter, or to apply it to the reed at some point intermediate of the ends thereof, it would be unnecessary to provide means for opening the frame, but, inasmuch as it is more or less frequently necessary or desirable to remove or apply the implement intermediate of the ends of the reed, I have made provision for opening and closing said frame, as already described.

In practice, the implement is held by the handle with the leading and hook terminals at the rear, and, starting at the right-hand end of the reed, is moved up and down until it passes out at the left-hand end of said reed, unless it be desired sooner to remove said implement, in which event pressure is applied on the arm 9 to force the arm 7 out of engagement with the stud 12 and swing said arm forwardly on the pivot 8. When thus open the implement can be inserted at any point in the reed, and then pressure is exerted on the arm 9 to swing the same upwardly and force the arm 7 into engagement again with the stud 12,

care being taken at the same time to cause the finger 6 and the hook 11 to engage each other in proper relationship.

While the implement is in engagement and operation with the reed, the front rail of said reed extends through the space enclosed or bounded by the frame parts; and it is this rail that must be cleared whenever said implement is applied to or removed from said reed at a point intermediate of its ends, and which necessitates the opening of the frame so as to enable the finger 6 and the hook 11 to pass respectively over and under said rail.

In each of Figs. 5 and 6 a fragment of a reed is represented at 14. This reed is provided with the usual wires 15 between which are the dents 16 for the warp-threads, a fragmentary portion of one of which latter is represented at 17 in Fig. 5. It is understood, of course, that the reed 14 is positioned horizontally for the drawing-in operation; and it is assumed that the reed 14 and the reed-hook elements shown in Figs. 5 and 6 are viewed from the rear, so that the implement travels through the reed from left to right, instead of from right to left as is the case in actual practice with the operator in front of the reed.

In starting the implement through the reed, the arm 10 is placed against the first wire 15 and said implement is drawn downwardly, when the finger 6 encounters the top of said wire and said finger and the hook 11 are separated by the same, upon the continued downward movement of the implement, until said wire is cleared and said hook snaps into contact again with said finger. The implement is next moved upwardly, and the now contacting finger 6 and hook 11 pass through the first dent 16. The warp-thread 17 is then placed beneath the hook 11 or caused to be caught by the same, the implement is again moved downwardly, and said thread is carried through the first dent 16 by said hook; while at the same time the finger 6 encounters the second wire 15 and passes through the second dent 16. While the arm 5 is in the second dent, the arm 10 causes the hook 11 to snap into contact with the finger 6 as soon as said hook clears the second wire 15, just as in the first case. The implement is moved upwardly the second time, the contacting finger 6 and hook 11 then passing through the second dent, another warp-thread is caught by said hook, and the implement is carried downwardly to pass said thread through the second dent. These operations are repeated until there is a warp-thread in each dent of the reed, and the implement passes clear of the reed at the end opposite to that where the start was made, unless sooner removed for any cause. In Fig. 5 it is assumed that the implement is descending and about to

carry the warp thread 17 through one of the dents 16, such thread being engaged by the hook 11, and the finger 6 is represented as having entered the next succeeding dent, so that said hook, after having drawn the warp-thread through its dent, will pass upwardly through said next succeeding dent and the implement will be advanced one step. In Fig. 6 it is assumed that the implement is being moved upwardly, and the hook 11 is shown part way through the dent through which the finger 6 last passed. The finger 6 and the hook 11 will here pass through the same dent. The wires 15 yield sufficiently to enable the leading and hook terminals of the implement to pass through the dents, even though the combined thickness of such terminals should be greater than the normal width of any dent.

I am aware that machines and machine elements have been produced for drawing-in purposes, which travel progressively and automatically through the dents, but am not aware that any hand implement has been devised wherewith it is possible to obtain a similar result.

More or less change in the shape, size, construction, and arrangement of some or all of the parts of this implement may be made without departing from the spirit of my invention or exceeding the scope of what is claimed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a reed hook of the character described, with a shank provided with a handle, and having an arm with a depending leading terminal, of a part attached to said shank and having an arm with a hook terminal that rises into cooperative relation with said leading terminal, the supporting members for said terminals being relatively movable, whereby said terminals can be separated for the passage of a reed rail.

2. The combination, in a reed hook of the character described, with a shank provided with a handle, and having an arm with a depending resilient leading terminal, of a part attached to said shank and having an arm with a resilient hook terminal that rises into cooperative relation with said leading terminal, the supporting members for said terminals being relatively movable, whereby said terminals can be separated for the passage of a reed rail.

3. The combination, in a reed hook of the character described, with a shank provided with a handle, and having an arm with a depending leading terminal, of a part pivotally connected with said shank and having an arm with a hook terminal that rises into cooperative relation normally with said leading terminal.

4. As an improved article of manufacture,

a hand implement of the class described comprising a frame having leading and hook terminals, which frame consists of pivotally-connected resilient members adapted to be opened for the passage between said terminals of a reed rail, and a handle for said frame.

5. As an improved article of manufacture, a hand implement of the class described comprising a shank, a top arm, and a depending arm provided at the lower terminal with a finger, a bottom arm pivotally connected with said shank, and an arm rising from said bottom arm and provided at the upper terminal with a hook, said finger and hook being in normal contact with each other, said shank being provided with a handle.

6. As an improved article of manufacture, a hand implement of the class described, comprising a shank, a top arm, a depending arm provided at the lower terminal with a laterally-tapered finger, a bottom arm pivotally connected with said shank, and an arm rising from said bottom arm and provided at the upper terminal with a hook, said finger and hook being in normal contact with each other, said shank being provided with a handle.

7. As an improved article of manufacture, a hand implement of the class described comprising a shank, a top arm, a depending arm provided at the lower terminal with a finger, a bottom arm connected with said shank, and an arm pivotally rising from said bottom arm and provided at the upper terminal with a laterally-tapered hook, said finger and hook being in normal contact with each other, said shank being provided with a handle.

8. As an improved article of manufacture, a hand implement of the class described comprising a shank, a top arm, a depending arm provided at the lower terminal with a laterally-tapered finger, a bottom arm pivotally connected with said shank, and an arm rising from said bottom arm and provided at the upper terminal with a laterally-tapered hook, said finger and hook being in normal contact with each other, said shank being provided with a handle.

9. As an improved article of manufacture, a hand implement of the character described comprising a shank, a top arm, a depending arm having a finger at the lower terminal, a bottom arm pivotally connected with said shank, and an arm rising from said bottom arm and having a finger at the upper terminal, said arms being resilient, and said downwardly-extending and upwardly-extending arms being out of alignment to enable said finger and hook to be forcibly engaged with each other, said shank being provided with a handle.

10. The combination, in an implement of

the character described, with a shank, a top arm, and a depending arm having a finger at the base, said frame being provided with a handle, of an arm pivotally connected with said shank, a bottom arm, and an upwardly-extending arm having a hook at the top, the arrangement and construction of parts being such that said finger and hook may be retained in forcible engagement.

11. The combination, in an implement of the class described, with a shank, a top arm, and a depending arm having a finger at the base, of an arm pivotally connected with said shank, a bottom arm, an upwardly-extending arm having a hook at the top, the construction and arrangement of parts being such that said finger and hook may be retained in forcible engagement, and locking

and releasing means for the parts which are movably connected with said shank.

12. The combination, in an implement of the class described, with a shank provided with a stud, a top arm, and a depending arm having a finger at the base, of an arm pivotally connected with said shank and having an opening therein to receive said stud, a bottom arm, and an upwardly-extending arm having a hook at the top, the construction and arrangement of parts being such that said finger and hook may be retained in forcible engagement.

FREDERICK J. HEINE.

Witnesses:

R. E. ALLBEE,
F. A. CUTTER.